

Curriculum Vitae

Dr. Sanat Nalini Sahoo

Associate Professor

Civil Engineering Department

NIT Rourkela, Odisha, India-769008

E mail: sahoosanat@nitrkl.ac.in

sanatnalinisahoo@gmail.com

Mobile – 91-94375-72808, 91-88950-71808



EDUCATIONAL QUALIFICATION

- PhD from Department of Civil Engineering with specialization Water Resources Engineering, IIT Guwahati.
- Completed ME in Hydraulics and Irrigation Engineering from VSSUT (formerly UCE), Burla, Odisha
- Completed B.Tech in Civil Engineering from CET, OUAT, Bhubaneswar.
- Completed +2 Science (Council of Higher Secondary Education, Odisha).
- Completed 10th standard (Board of Secondary Education Odisha).

PROFESSIONAL EXPERIENCE

- Working as Associate Professor, Department of Civil Engineering, NIT Rourkela since July 2024.
- Worked as Assistant Professor, Department of Civil Engineering, NIT Rourkela from July 2015 to June 2024.
- Worked as Assistant Professor in Parala Maharaja Engineering College, Berhampur, Govt of Odisha, from March 2012 to July 2015.
- Worked as Teaching Assistant for various UG and PG courses at IIT Guwahati during PhD programme.

CURRENT RESEARCH INTEREST

- Application of Remote sensing and GIS in Water Resources Management
- Urban Flood Risk Management
- Ground Water Modeling and Management
- Surface Water Groundwater Interaction
- Impact of climate change on water resources

List of Publications

International Journals

1. Nathi, A. C. and Sahoo, S. N. (2024). “Assessing the impacts of climate and land cover change on groundwater recharge in a semi-arid region of Southern India”. *Theoretical and Applied Climatology*, Springer. DOI - 10.1007/s00704-024-05065-8
2. Sahu, P., Snehit, B. and Sahoo, S. N. (2024). “Prioritization of Sub-Watersheds for Soil Conservation Management Using Morphometric, Biophysical and Socioeconomic Characteristics: A Fuzzy AHP approach”. *Environmental Earth Sciences*, 83:102, DOI: 10.1007/s12665-023-11410-3
3. Nathi, A. C. and Sahoo, S. N. (2023). “Groundwater levels and resiliency mapping under land cover and climate change scenarios: A case study of Chitravathi basin in Southern India”. *Environmental Monitoring and Assessment*, Springer, 195:1394 DOI: [10.1007/s10661-023-11995-z](https://doi.org/10.1007/s10661-023-11995-z)
4. Sankalp, S. and Sahoo, S. N. (2023) “An Automated Approach to Establish Relationship between Total and Effective Impervious Area for Urban Indian Catchments”. *Urban Water Journal*, Taylor and Francis DOI:[10.1080/1573062X.2023.2255168](https://doi.org/10.1080/1573062X.2023.2255168)
5. Ramakrishnan, R., Sahoo, S. N. and Nathi, A. C. (2023) “Determination of ETCCDI climate change indices in Kabini basin, India”. *Journal of Indian Water Resources Society*, 43 (2), 1-6, April 2023.
6. Sankalp, S., Sahoo, B. B. and Sahoo, S. N. (2022) “Uncertainty and sensitivity analysis of deep learning models for diurnal temperature range (DTR) forecasting

- over five Indian cities”. *Environmental Monitoring and Assessment*, Springer, DOI: 10.1007/s10661-022-10844-9
7. Sankalp, S. and Sahoo, S. N. (2022) “Grey relational modelling of land surface temperature (LST) for ranking Indian urban cities”, *Environmental Processes*, Springer. 9 (2) .
 8. Sankalp, S. and Sahoo, S. N. “Fuzzy AHP modelling of urbanization and environmental stress to rank selected Indian cities for liveability”. *Environment, Development and Sustainability*, Springer. DOI-10.1007/s10668-022-02327-1
 9. Sankalp, S., Sahoo, B. B. and Sahoo, S. N. (2022) “Deep learning models comparable assessment and uncertainty analysis for diurnal temperature range (DTR) predictions over Indian urban cities”. *Results in Engineering*, Elsevier, 13 (2022), 100326
 10. Navane, V. S. and Sahoo, S. N. (2021). “Identification of groundwater recharge sites in Latur district of Maharashtra in India based on remote sensing, GIS and multi criteria decision tools.” *Water and Environment Journal*, Wiley, 35 (2), 544-559.
 11. Sethi, P., Sankalp, S. and Sahoo S. N. (2021) “Quantifying the dynamics of urban growth modes in Bengaluru, India.” *Urban Design and Planning*, 174 (1), 1-14.
 12. Ravi, K. and Sahoo, S. N. (2021). “Use of meteorological data for identification of drought.” *ISH Journal of Hydraulic Engg.*, Taylor and Francis, 27 (4), 427-433
 13. Sankalp, S. and Sahoo, S. N. (2021). “Impact of urbanization on effective impervious area of Ahmedabad city in India.” *ISH Journal of Hydraulic Engg.*, Taylor and Francis, 27 (4), 452-459
 14. Dandapat, A. and Sahoo, S. N. (2021). “Evaluation of loss models and effect of LU/LC changes on surface runoff in Subarnarekha River Basin.” *ISH Journal of Hydraulic Engg.*, Taylor and Francis, 27 (Sup1), 542-555
 15. Harikrishna, K. S. and Sahoo, S. N. (2020). “A methodological framework for identification of baseline scenario and assessing the impact of DEM scenarios on SWAT model outputs”. *Water Resources Management*, Springer, 34 (15), 4795-4814.
 16. Raj, P. and Sahoo S. N. (2019). “Evaluation of different techniques to detect land use/land cover over an area”. *Journal of Spatial Hydrology*, 14 (2), 1-24.

17. Sahoo, S. N. and Sreeja, P. (2018). "Detention ponds for managing flood risk due to increased imperviousness: A case study in an urbanizing catchment of India." *Natural Hazards Review. ASCE* 19 (1), 05017008-1 to 05017008-11.
18. Sahoo, S. N. and Sreeja, P. (2017). "Sensitivity of Imperviousness Determination Methodology on Runoff Prediction." *ISH Journal of Hydraulic Engineering, Taylor and Francis Publications*, 23 (3), 276-282.
19. Sahoo, S. N. and Sreeja, P. (2016). "Relationship between peak rainfall intensity (PRI) and maximum flood depth (MFD) in an urban catchment of North-East India." *Natural Hazards*, Springer, 83 (3), 1527-1544.
20. Sahoo, S. N. and Sreeja, P. (2016). "Determination of Effective Impervious Area for an Urban Indian Catchment." *Journal of Hydrologic Engineering, ASCE*, 21 (4), 05016004 (1-10).
21. Sahoo, S. N. and Sreeja, P. (2017). "Development of Flood Inundation Maps (FIM) and Quantification of Flood Risk in an Urban Catchment of Brahmaputra River." *ASCE – ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering, ASCE*, 3 (1), A4015001-11. DOI- 10.1061/AJRUA6.0000822
22. Sahoo, S. N. and Sreeja, P. (2014). "Determination of urbanization based on imperviousness." *Urban Design and Planning*, ICE Publishing, Thomas Telford, UK, 167 (2), 49-57.
23. Sahoo, S. N. and Sreeja, P. (2014). "A methodology for determining runoff based on imperviousness in an un-gauged peri-urban catchment." *Urban Water Journal*, Taylor and Francis, UK, 11 (1), 42-54.
24. Sahoo, S. N. and Sreeja, P. (2013). "Role of rainfall events and imperviousness parameters in urban runoff modeling." *ISH Journal of Hydraulic Engineering*, Taylor and Francis, UK, 19 (3), 329-334.
25. Sahoo, S. N. and Sreeja, P. (2013). "A review of Decision Support System Application in Flood Management." *International Journal of Hydrology Science and Technology*, Inderscience Publication, 3 (3), 206 - 220.
26. Sahoo, S. N. and Sreeja, P. (2012). "Application of geospatial technologies to determine imperviousness in peri-urban areas." *International Journal of Remote Sensing Applications*, 2 (4), 47-51.

27. Sahoo, S. N. and Sreeja, P (2011). “Total and Effective Impervious Area from low resolution satellite imageries.” *International Journal of Earth Sciences and Engineering*, 4 (6 SPL), 334-337.

National Journals

28. Sahoo, S. N. and Sreeja, P. (2011). “Determination of infiltration parameters for urban flood modeling.” *Journal on Civil Engineering, imanager publications, India*, 1 (3), 7-12.

Book Chapters

1. Sahoo, S. N. and Sreeja, P. (2016). “Impact of total and effective impervious area on runoff prediction.” *Water Science and Technology Library: Urban Hydrology, Watershed Management & Socio-Economic Aspects*, Edited by A. K. Sarma, V. P. Singh, S. A. Kartha, R. K. Bhattacharjya (eds), pp 23-28, Springer. DOI:10.1007/978-3-319-40195-9
2. Sahoo, B. M. and Sahoo, S. N. (July, 2019). “Effect of land use and land cover change on runoff characteristics in Mumbai city.” *Applications of Geomatics in Civil Engineering*, Edited by Jayant Kumar Ghosh and Irineu da Silva (eds), Vol-33, Ch-4, pp 183-192, Springer. DOI: 10.1007/978-981-13-7067-0
3. Sukumaran H., Sahoo S.N. (2022) Error Due to DEM Sources in Catchment Area and River Network Using D8 Algorithm. In: Jha R., Singh V.P., Singh V., Roy L.B., Thendiyath R. (eds) *Hydrological Modeling*. Water Science and Technology Library, vol 109. Springer, Cham. https://doi.org/10.1007/978-3-030-81358-1_20
4. N. Ajay and Sahoo S.N. (2022) Spatial Variability of Groundwater Quality Parameters of East Godavari District, Andhra Pradesh, India. In: Jha R., Singh V.P., Singh V., Roy L.B., Thendiyath R. (eds) *Groundwater and water quality*, Water Science and Technology Library, vol 119. Springer, Cham. https://doi.org/10.1007/978-3-031-09551-1_21
5. Sovan Sankalp, Uma Maheswar Rao, Kanhu Charan Patra and Sanat Nalini Sahoo (2023) Chapter 11 - Modeling gated recurrent unit (GRU) neural network in

International Conferences

1. Sahoo, S. N., Das, P. K. and Dash G. C. “Hydrodynamic Dispersion of Reactive Pollutants in Ground Water Flow.” In CD proceedings of 3rd International Perspective on Current and future state of water resources & the environment, EWRI of ASCE , January 5-7, IIT Chennai, India-2010
2. Sahoo, S. N. and Sreeja, P. “Evaluation of near saturation infiltration characteristics of a locally available soil.” In proceedings of 6th International Congress in Environmental Geotechniques (6ICEG)-2010, November 8-12, IIT Delhi, India.
3. Sahoo, S. N. and Sreeja, P. “Indirect Determination of Effective Impervious Area (EIA) of an urban city in North East India.” In proceedings of World Environmental Water Resources Congress, EWRI, ASCE, May 22 to 26-2011, California.
4. Sahoo, S. N. and Sreeja, P. “Determination of Effective Impervious Area in Guwahati city: A Case Study.” In proceedings of AMTID, September 28 to 30, 2011, NIT Calicut, Kerala, India.
5. Sahoo, S. N. and Sreeja, P. “Total and Effective Impervious Area from low resolution satellite imageries.” In proceedings of ACE, October 21 – 23, 2011, KLU, Hyderabad, India.
6. Sahoo, S. N. and Sreeja, P. “Impact of total and effective impervious area on runoff prediction.” In Proceedings of ENSURE-2012, February 24- 26, IIT Guwahati, India.
7. Sahoo, S. N. and Sreeja, P. “Role of rainfall events and imperviousness parameters in urban runoff modeling.” In Proceedings of HYDRO-2012, December 7-8, IIT Mumbai, India.
8. Sahoo, S. N. and Sreeja, P. “Flood inundation mapping (FIM): An effective tool for urban flood management.” In proceedings of HYDRO-2013 held at IIT Madras, India, 4-6 December 2013.
9. Sankalp, S. and Sahoo, S. N. “Identification of urbanization growth trend for Ahmedabad city in India using RS and GIS.” In proceedings of HYDRO-2017 held at

- L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-3, 1755-1763.
- 10.** Sethi, P. and Sahoo, S. N. “Dynamics of Urbanisation In Bangalore Urban From Landsat observations.” In proceedings of HYDRO-2017 held at L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-3, 1857-1865.
 - 11.** Ravi, K. K. and Sahoo, S. N. “Use of meteorological data for identification of drought.” In proceedings of HYDRO-2017 held at L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-3, 2355-2360.
 - 12.** Dandapat, A. K. and Sahoo, S. N. “Evaluation of different loss models for runoff estimation.” In proceedings of HYDRO-2017 held at L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-3, 2344- 2354.
 - 13.** Saleem, M. and Sahoo, S. N. “A review on artificial Neural Networks for streamflow prediction.” In proceedings of HYDRO-2017 held at L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-2, 1249-1257.
 - 14.** Navane, V. S. and Sahoo, S. N. “A review of integrated RS and GIS techniques in ground water potential zone mapping.” In proceedings of HYDRO-2017 held at L D college of Engineering, Ahmedabad, India, 21-23 December 2017, Vol-1, 246-255.
 - 15.** Sahoo, B. M. and Sahoo, S. N. “Effect of land use and land cover change on runoff characteristics in Mumbai city.” In proceedings of ICGCE-2018 held at IIT Roorkee, India, 5th -6th April 2018.
 - 16.** Harikrishna, K. S. and Sahoo, S. N. (2018). “Error due to DEM sources in catchment area and river network using D8 algorithm.” In proceedings of HYDRO-2018 held at NIT Patna, India, 19-21 December 2018.
 - 17.** Chandra, N. A. and Sahoo, S. N. (2018). “Geospatial variability of groundwater depth and quality parameters of East Godavari district, Andhra Pradesh, India.” In proceedings of HYDRO-2018 held at NIT Patna, India, 19-21 December 2018.
 - 18.** Snehit. B. and Sahoo, S. N. (2019). “Prioritization of Sub-Watersheds for Soil Conservation Management Using Morphometric Characteristics.” In proceedings of HYDRO-2019 held at Osmania University, Hyderabad, India, 18-20 December 2019, *Vol- I, pg. 1399-1409.*

19. Chandra, N. A. and Sahoo, S. N. (2019). "Spatial Variability of Ground Water Depth of East Godavari District, Andhra Pradesh, India." In proceedings of HYDRO-2019 held at Osmania University, Hyderabad, India, 18-20 December 2019, *Vol- II, pg. 2738-2744.*
20. Sankalp, S. and Sahoo, S. N. (2019). "A correlative analysis of ground water depth and quality parameters of Bhubaneswar city using water quality index." In proceedings of HYDRO-2019 held at Osmania University, Hyderabad, India, 18-20 December 2019, *Vol- II, pg. 3388-3396.*
21. Reddy, M. S. B. and Sahoo, S. N, 2021. "Modelling and management of salt water intrusion in coastal aquifers using SEAWAT: A review", In proceedings of HYDRO-2020, held at NIT Rourkela, India, 26-28 March 2021.
22. Shrivastava, S and Sahoo,S.N.,2021. "Seepage and Stability Analysis of Earthen Dam in Slow and Rapid Drawdown Conditions" In proceedings of HYDRO 2020 held at NIT, Rourkela, India, 26-28 March 2021.
23. Mandal, N.S. and Sahoo, S.N., 2021. "Effect of Climate Change on the Precipitation of Saraikela-Kharsawan District of Jharkhand by Statistical Downscaling Method". In proceedings of HYDRO-2020 held at National Institute of Technology, Rourkela, India, 26-28 March 2021, Vol- I, pg. 258-266
24. Rudra Ramakrishnan, Sanat Nalini Sahoo and Nathi Ajay Chandra., 2022 "Determination of ETCCDI climate change indices in Kabini basin, India." In proceedings of IGWC-2022 held at Indian Institute of Technology, Roorkee, India, Nov 02 – 04, 2022.
25. Rudra Ramakrishnan, Sanat Nalini Sahoo and Nathi Ajay Chandra., 2022 "Identification of Suitable Locations for Artificial Groundwater Recharge by Weighted Overlay Method Using GIS Tools." In proceedings of HYDRO-2022 held at Punjab Engineering College, Chandigarh, India, Dec 22 – 24, 2022.
26. Harishankar M and Sanat Nalini Sahoo., 2022. "Dam Site Suitability using Remote sensing and GIS techniques" In proceedings of HYDRO-2022 held at Punjab Engineering College, Chandigarh, India, 22-24 December, 2022.

27. D. Pavan Kumar and Sanat Nalini Sahoo., 2022. “Assessment of drought using meteorological and Remote sensing data” In proceedings of HYDRO-2022 held at Punjab Engineering College, Chandigarh, India, 22-24 December, 2022.
28. Vahida S and Sanat Nalini Sahoo., 2022 “Urban Flood Estimation in Bhubaneswar city using Storm Water Management Model (SWMM)” In proceedings of HYDRO-2022 held at Punjab Engineering College, Chandigarh, India, 22-24 December, 2022.
29. Nathi A. C., Sahoo, S. N. and Ramakrishnan, R. (2022). “Impact of climate change on groundwater recharge in a semi-arid region under SSP2-4.5 Scenario.” In proceedings of IGWC-2022 held at Indian Institute of Technology, Roorkee, India, during 2nd Nov – 4th Nov, 2022.
30. Das A., Sahoo, S.N and Nathi A.C., (2023). " Combined impact of land cover and climate change on urban flooding:A review." In proceedings of HYDRO 2023 held at National Institute of Technology Warangal, India, during 21st Dec-23rd Dec,2023.
31. Panda, R.R and Sahoo, S.N., (2023)."Estimation of Soil Hydraulic Properties from Tension Infiltrometer Experiments."In proceedings of HYDRO 2023 held at National Institute of Technology, Warangal, India during 21st Dec-23rd Dec 2023.

National Conferences

32. Sahoo, S. N. and Bhattacharjya R. K. “An optimization technique for determination of infiltration model parameters.” In Proceedings of RAF&SM-2010, NIT, Rourkela.

Reviewer Assignments

- ISH Journal of Hydraulic Engineering, Taylor and Francis
- Journal of Hydrology, Elsevier
- Journal of Hydrologic Engineering, ASCE
- Urban Water journal, Taylor and Francis
- Journal of Institution of Engineers, Springer
- Journal of Indian Society for Remote Sensing, Springer
- ToC of the book “Remote Sensing and Image Interpretation, 7e by Lillesand”, Wiley International.

Conferences/Seminars/Workshops Organized

1. Co-Convener of the International Symposium River Flow – 2016 on 25th February 2016 at NIT Rourkela
2. Co-Coordinator of the short term course “Computer application in water resources engineering” held on 1st- 6th October 2018 at NIT Rourkela
3. Co-Organizing Secretary of the Silver Jubilee Year of the International Conference HYDRO-2020 on 26th to 28th March 2021 at NIT Rourkela
4. Coordinator of the 5-day webinar series on “Advances in Water Resources Engineering (AWRE-2022)” held during 15th- 19th February 2022 at NIT Rourkela
5. Coordinator of the 5-day workshop on “Computer Applications in Water Resources Engineering (CAWRE-2023)” held during 1st- 5th June 2023 at NIT Rourkela
6. Coordinator of the 5-day workshop on “Computer Applications in Water Resources Engineering (CAWRE-2024)” scheduled to be held during 31st May - 4th June 2024 at NIT Rourkela

Projects Handled

R & D Projects

1. Principal Investigator for the project “Development of a Relationship between Total and Effective Impervious Area for Urban Indian Catchments”, sponsored by Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India, Completed (2016-2020) (27.12 lakhs)
2. Co-Principal Investigator for the project “Land-atmosphere interaction during thunderstorms over major urban areas of India using high resolution mesoscale modeling framework and climatological data sets”, sponsored by Ministry of Earth Sciences, New Delhi, India, Ongoing. (2021-2024) (45.46 lakhs)
3. Co-Principal Investigator for the project “Condition Assessment and Management Plan (CAMP) for Mahanadi River Basin”, sponsored by Ministry of Water Resources, Govt. of India, Ongoing. (2024-2027)

Consultancy

1. Co-Principal Consultant for the project “Vetting of design and drawings for execution of rural piped water supply scheme in 28 GP Borigumma block, 16 GP Kotpad block and 7 GP Jeypore block of Koraput district, Odisha, India” Client- M/S JMC-RAMKY, Mumbai. (2018-2021) (50.62 lakhs)

PhD Guidance

Sl. No	Name of the student	Title of the Project	Status	Role	Year of Status
1	Sovan Sankalp	Urbanization and its impact on hydrologic and environmental parameters of urban Indian Catchments	Graduated	Supervisor	2023
2	Nathi Ajay Chandra	Use of Remote Sensing Data in Assessing the Impact of Climate and Land Use Land Cover Change on Groundwater Dynamics in Semi-Arid Regions	Defence Viva-voce to be Conducted	Supervisor	July 2024
3	Anuran Bhattacharjee	Environmental Flow Assessment	Continuing	Supervisor	Since 2020
4	Shubhshree Panda	Surface water - groundwater Interaction	Continuing	Supervisor	Since 2023
5	Anisha Das	To be decided	Continuing	Supervisor	Since 2024
6	Supriya Rout	To be decided	Continuing	Co-Supervisor	Since 2024

Member of Professional Bodies

- Life Member of AHI (Association of Hydrologists of India) bearing membership number AHI-LM-396-688
- Life Member of ISH (Indian Society of Hydraulics), Membership No. LM – 1524
- Life Member of ISRS (Indian Society of Remote Sensing), Membership No. L – 5630
- Student Member of American Society of Civil Engineers (ASCE), membership ID - 960152